WISCONSIN DIVISION OF PUBLIC HEALTH
Department of Health and Family Services

TB Fact Sheet Series

FALSE-POSITIVE CULTURES FOR MYCOBACTERIUM TUBERCULOSIS

Rapid detection methods for *M. tuberculosis*. The definitive diagnosis of tuberculosis (TB) disease depends on the isolation and identification of the etiologic agent, *Mycobacterium tuberculosis*, in clinical specimens. Rapid, sensitive laboratory techniques for the growth and detection of mycobacteria have facilitated diagnosis of TB and isolation and appropriate treatment of TB patients. Unfortunately, these new rapid diagnostic methods also appear to have increased the possibility of laboratory cross-contamination.

As more laboratories adopt techniques using broth media (e.g. BACTEC®, MGIT®, BacT/Alert®), cross-contamination of samples may become more common--particularly in communities with a high incidence of TB, where large numbers of specimens are being evaluated for *Mycobacterium tuberculosis.*[1,2]

False positive cultures for *M. tuberculosis*. The potential for errors underscores the need for prompt recognition of false-positives. Indicators of potential false-positive *M. tuberculosis* cultures include:

- All specimens from a patient are smear negative for acid-fast bacilli (AFB), and only one is culture-positive
- The patient's signs, symptoms and clinical course are inconsistent with TB
- A culture-positive *M. tuberculosis* specimen, which is also likely to be AFB smear-positive, was processed the same day as the suspected specimen
- The DNA fingerprint pattern of the suspected isolate is identical to that of the putative source isolate
- There are no known epidemiologic links between the patient with the suspected isolate and the patient with the putative source isolate
- The duration of time for detection of growth was prolonged, or only sparse colonies were detected on solid medium.[3]

It is not unusual for a specimen to be smear-negative for AFB and culture positive for *M. tuberculosis*; in fact, this is the rule rather than the exception for extrapulmonary TB specimens. However, a single positive culture preceded or followed by all negative smears and cultures from the same site should be questioned. For help with evaluations of questionable laboratory results, call the TB Program at (608) 266-9692. In these situations, clinical judgment determines if treatment is needed for active disease.

REFERENCES AND NOTES

[1] Braden CR, Templeton GL, Stead WW, et al. Retrospective of detection of laboratory cross-contamination of *Mycobacterium tuberculosis* cultures with use of DNA fingerprint analysis. *Clin Infec Dis* 1997;24:35-40.

[2] Nitte AT, Davidson PT, de Koning ML, et al. Misdiagnosis of multi-drug resistant tuberculosis possibly due to laboratory-related errors. *JAMA* 1996;276(24):1980-83.
[3] Centers for Disease Control and Prevention. Multiple misdiagnoses of tuberculosis resulting from laboratory error--Wisconsin, 1996. *MMWR* 1997;46(34):800.

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